

Starfighter Combat School

A General Overview

The following is excerpted from 'Alliance Strategy and Tactics Lecture 137: Combat Starfighters, " one of a series of a holo-lectures created by the Alliance Ministry of Education for distribution to mid-level Alliance political and military leaders.

Greetings, gentlebeings. I am Wing Commander Wedge Antilles. In this lecture, I am going to discuss the importance of starfighters in the Alliance's strategy and tactics. This will give you a better idea of how to use starfighters in your various commands. It is suggested that you re-examine holo-tapes 134 to 136 before you continue.

This lecture will be presented in four sections: General Overview, Acquisition and Supply, Strategy and Tactics, and Starfighter Types. As in the other lectures in this series, each section will open with an overview, followed by more detailed information. Those with commands not specifically concerned with starfighters may wish to view only the overviews and skip the detailed sections.

You may wish to calibrate your holo-viewer so that the counter reads zero at my mark. The General Overview begins at holo-disk sector 5,101; Acquisition and Supply begins at holo-disk sector 11,245; Strategy and Tactics at holo-disk sector 56,070...

Combat starfighters are one of the Alliance's primary tools for denying control of space to the Empire. As our main fleet must avoid combat except where absolutely necessary, starfighters are virtually the only forces in daily contact with the enemy. Roughly 35 percent of the Alliance's military budget is dedicated to the creation and maintenance of starfighters.

Space Denial

The main purpose of combat starfighters is denial of control of space to the Empire's forces, not the control of that space itself. Denial of space means to curtail the free movement of the enemy's vessels without significant protection. Control of space suggests that one's own vessels are able to move freely without protection. Except in rare cases, the Alliance is unable to control space with its starfighters.

Unlike the larger capital ships, starfighters are not self-contained; they require a staggering amount of fuel to operate and an equally staggering amount of expensive maintenance to keep in space. For them to control a system, therefore, requires expensive and extensive base facilities within that system or nearby. Unfortunately, this is a luxury which we enjoy only in systems so firmly under our control or off the beaten track that Imperial starship attack against those bases is unlikely or prohibitively expensive.

Therefore, our starfighters operate primarily from hidden bases (which limits the amount of starfighters which can be deployed safely), or from bases far from Imperial scrutiny, necessitating long, fuel-consuming voyages to the battle area. Within these tactical strictures, our starfighters concentrate upon harassment and hit-and-run raids rather than attempting to defeat the enemy outright.

Despite these limitations, the starfighter is still a very effective weapon. Their very existence threatens every Imperial supply ship, warship and space station with destruction at any second, forcing dramatic changes in Imperial strategy and tactics ...

Except in the Core Worlds, space travel has become a slow and dangerous business for every Imperial ship.

Acquisition and Supply

A sizable chunk of the Alliance's precious treasury is devoted to the acquisition and supply of starfighters, Underscoring the importance of this to the Alliance, the Minister of War himself chairs the Committee on Starfighter Acquisition and Maintenance; other permanent members include the Ministers of Supply, Industry and Finance, as well as a number of starfighter Wing Commanders and ace pilots. Starfighter supply is controlled through the Department of Naval Ordnance and Supply.

For more details on this subject, see "Lecture Number 522: Organization of Alliance Command."

Acquisition

The Alliance gained the majority of its original complement of starfighters through the wholesale defection of planetary and systems defense forces after President Palpatine took the title of Emperor and before he had solidified his hold on the Navy. During those months, literally thousands of pilots went "underground" and joined the growing Rebellion. However, most of these ships were outdated and in poor repair, unable to stand up against the Navy's modern starfighters.

A notable addition to the Alliance space forces was gained when the entire senior design staff of Incom Corporation defected to the Alliance, taking with them the plans and prototype models for the X-wing starfighter. As most of you know, the X-wing has stood up very well indeed to the Navy's vessels.

As Palpatine secured his position and crafted the Navy into his complete tool, it became more and more difficult to entice home defense forces into defecting and virtually impossible to acquire starfighters through arms merchants at any cost -- Imperial reprisals were greatly feared even before the Death Star. Therefore, the Alliance had to learn to build its own starfighters.

As you will understand, precise information regarding the location and nature of the Alliance ship design and manufacturing capabilities is highly classified and no exact details will be given here.

The Alliance has a number of starfighting manufacturing plants in operation across the galaxy. These are extremely secret, their locations known only to a few pilots and Mon Mothma's top senior advisors. Even those working in the plants often do not know exactly where it is located. They are brought in "blind" and, even if later captured, are unable to give their interrogators precise information.

Because of the difficulty of shipping starfighter-grade materiel across deep space in secret, most Alliance manufacturing facilities are based upon worlds or in solar systems which provide everything needed to build the ships: raw material, foundries, heavy industry, and so forth. The computer and electronics manufacturing facilities are often on-site as well. However, these components are smaller, and therefore easier to transport without undue attention.

A small cadre of Alliance pilots is responsible for testing new starfighters and, if acceptable, transporting them to their assigned bases. These pilots are extremely dedicated beings, sworn to die before capture - and provided with secret means to ensure that they can end their lives if they fall into Imperial hands.

The Alliance is always searching for places to build new starfighter manufacturing facilities. If you have knowledge of a likely site, contact your Sector Supply Secretary immediately. It should be noted, however, that the Empire is extremely determined to find and destroy our capacity to build spacefaring vessels; planets they discover harboring such are routinely space-bombed into rubble.

Numerical Superiority Versus Qualitative Superiority

There is an age-old argument as to the relative importance of numbers and quality: in battle, is it better to have many adequate ships or a few good ones? Though the debate may provide hours of amusement for armchair strategists, for the Alliance, the question is rather moot.

We simply cannot hope to match the Empire in numbers. They have an entire galaxy's resources to draw upon, and we have but a few hidden manufacturing plants. Since we cannot beat their numbers, we concentrate our efforts upon making sure that our ships are better than theirs, and that our pilots are better, as well.

It has been my experience that superior quality vessels and pilots can offset extremely high numbers -- provided the numerical imbalance is not too great. For example, when first introduced by Admiral Ackbar, the Rebel B-wing starfighter was far superior to anything the Imperials had at the time. But in the Rebel raid on Fara's Belt, the small squadron of B-wings was wiped out by massive numbers of inferior TIE fighters. However, in the long run, superior intelligence, superior communication and superior command may be more important than numbers or quality.

Supply

Starfighters are extremely expensive to fuel and keep in operating condition. A starfighter requires expensive fuel cells for power. The most efficient fighters drain their power after a few short weeks of standard flying -- and the same amount of energy is exerted in just under *an hour* of combat flight. Starfighter fuel cells consist of refined radioactive metals mixes; these cells must be roughly twice as pure as standard starship-grade cells. Few civilian manufacturing facilities are capable of producing them. If you have knowledge of facilities which could be converted to manufacture starfighter fuel cells, please contact your Sector Supply Secretary immediately.

Maintenance

To keep in peak fighting condition, a starfighter requires about an hour's heavy maintenance for each 10 minutes of combat flight time. Combat places incredible stress upon the vessel's engines, chassis, shields, and life-support systems; even a near-miss by an enemy's weapons can severely damage a starfighter's electronics gear.

Most Alliance ships do not get nearly as much maintenance as they require. If a squadron has been in active combat for more than a week, odds are that they will suffer almost as many casualties from ship malfunction as from the enemy's fire.

However, it must be noted that this applies equally to both sides in the conflict. Imperial starfighters usually operate from superbly-equipped bases, often aboard Star Destroyers, but their ships are generally inferior in design and construction to ours, and their mechanics of a low grade of competence indeed. Downtime for TIE craft between battles is roughly four times as long as it is for Alliance ships, and TIEs have a reputation for severe loss of effectiveness if flown into battle without being properly maintained.

Strategy and Tactics

This section discusses strategy of unattached Alliance starfighters. Details on the use of starfighters in the Alliance Fleet are highly classified and available only to military personnel in the fleet.

To carry out their primary goal of space denial, starfighters must be able to strike anywhere within the Empire, at any time. They are stationed on small, hidden bases, usually near Imperial supply routes. As the Alliance Fleet is in hiding, these craft are often the only viable Rebel military presence within a sector.

Starfighters fly a variety of missions which can be broadly broken down into three categories: attack, defense and reconnaissance.

Attack Missions

Ideally, a starfighter attack mission profile pits starfighters against lightly-defended targets, preferably slow and unarmed transport vessels or bases, or smaller military ships without adequate TIE protection. To succeed at its primary strategic objective of space denial, the Alliance must constantly harass Imperial forces that are not adequately defended, causing precious military resources to be stripped from the fighting fronts to deal with our starfighters. As long as we can attack at places and times of our choosing, we maintain the initiative and force the enemy to conform to our movements.

Attacks against defended targets are usually to be discouraged. Though our vessels and pilots are undoubtedly better than the enemy's, his manufacturing and training resources far outweigh ours. He can more easily afford to lose 10 starfighters than we can afford to lose one.

There are cases, however, when such attacks are justifiable. The Alliance is in desperate need of supplies and in equal need of denying the supplies to the Imperial fleets; starfighters often spearhead attacks against guarded transport convoys.

Politically, it is sometimes necessary to launch attacks in enemy-held systems to "show the flag;" that is, to tell the oppressed peoples on the planets that they have friends, and to remind enemies that they are not secure -- anywhere.

Finally, attacks may be launched to divert enemy attention and strength from other areas of more importance. The diversionary force may be required to remain on the attack for far longer than is safe, allowing the enemy to gather enough strength in that area to severely damage the attackers. While this is occurring, other Alliance Forces attack the areas the Imperials have denuded to hit the diversion.

It must be stressed, however, that all such attacks can be ordered only at the Sector Command level or higher. Base commanders *do not* have the authority to attack strongly-defended targets without prior approval from Sector HQ. These attacks should always be part of a coordinated, sector-wide action; otherwise, valuable ships and pilots may be lost for no cause.

Defense

The Alliance cannot successfully defend against Imperial attack. Period. The Empire can always muster enough force to wipe out any defenses; even the Alliance Fleet could not successfully defend a fixed position against the full might of the Imperial Navy. Once a base is discovered, it is lost. Alliance starfighter defense tactics are, therefore, designed to slow Imperial attack to allow whatever is the objective of the attack to escape.

Though it is extremely painful to do so, Alliance pilots must be ready to abandon the defense when Imperial strength becomes overwhelming. Futile fights to the death to save an already-lost base are not encouraged.

Reconnaissance

These are intelligence-gathering missions. For the most part, passive monitoring of the enemy is handled by other agencies; starfighters are used to actively attack the enemy to find the disposition of his forces.

In its most simple form, a recon mission consists of an attack against an unknown target by fast, maneuverable craft. The attack is prosecuted until the enemy sends forth enough ships to discourage the attack, at which time the Alliance vessels withdraw.

These tactics allow the Alliance to determine where the enemy's strength is. Experienced pilots can quickly judge how many flights of TIE fighters they face, the makeup and disposition of any heavier ships, what kind of ground-based support is available and so forth.

This information can be crucial to a successful campaign; if the attackers have up-to-date data, they can plot their actions with much greater accuracy and chance of success.

Hyperspace in Starfighter Combat

Because all Alliance fighters are hyperdrive-capable (unlike their Imperial counterparts), strikes can be rapidly executed on Imperial targets far away from the base. This is the starfighter's preferred tactic -- striking quickly from out of hyperspace, taking full advantage of the element of surprise, then disappearing back into the hyperlanes before substantial resistance can be organized.

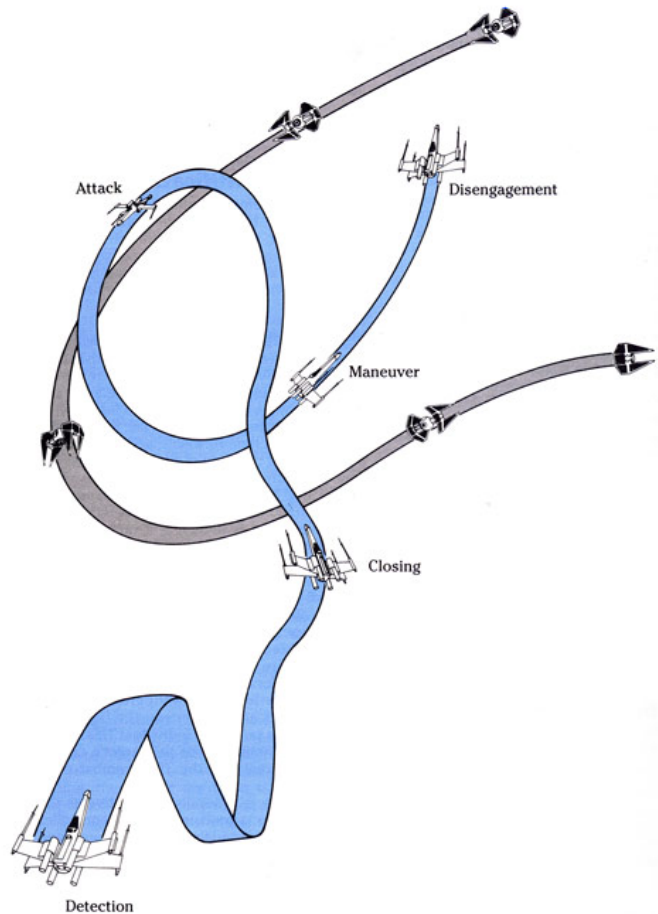
To maximize surprise and limit the enemy's reaction time, Alliance pilots attempt to come out of hyperspace extremely close to the target -- if possible, *within* its outer defense perimeter. There are risks involved, but if correctly executed, this maneuver leaves the target extremely vulnerable.

Starfighter Combat Tactics

According to Adar Tallon's *Treatise on Starfighter Tactics*, starfighter combat can be broken up into five stages.

- **Detection:** The first stage is *detection* (and its opposite, *avoidance of detection*). Starfighters can be detected by two methods -- visual and electronic. These are the keys to *identification* -- the main objective in detection.
- **Closing:** The second phase of starfighter combat is called *closing*. The objective during this stage is to reach an advantageous position from which to attack the enemy.
- **Attack:** The third, and most decisive stage is *attack*.
- **Maneuver:** *Maneuver* is the fourth and most glamorous stage of starfighter combat. Its importance is often overrated, however. A successful attack stage renders maneuver academic.
- **Disengagement:** Finally, there is the fifth and most underrated stage, *disengagement*. New pilots often take this stage for granted -- usually to their dismay.

The Five Stages of Starfighter Combat



Combat Stage One: Detection and Identification

Starfighter combat begins thousands of kilometers before the ships are within weapons range, a silent, deadly battle of machine versus machine. Given the tremendous speed which starfighters are able to attain, early and accurate detection is vital if a threat is to be met in time.

Sensors

Successful interception of an enemy fighter is dependent on early detection and positive identification. Individual Alliance ships are generally better equipped for long-range scanning than their Imperial counterparts; a lone X-wing is very likely to spot a lone TIE fighter well before it spots him. However, according to Imperial tactical doctrine, TIEs are supposed to stay well within sensor range of their base or capital ship -- and a starfighter's sensors cannot match those aboard larger vessels or bases.

After a target is detected, it must be positively identified. For Rebels, this is handled by the starfighter's data-sorting computers directly linked to the sensor suite. After examining profile, heat and electromagnetic signature, these identify all craft within range, assigning threat levels to each and displaying the information on the starfighter's video display.

The Empire's starfighters tend to rely on flight controllers for this information. After the craft have been identified by the ground or ship-based sensors and computers, the flight controllers assign targets to individual TIEs, relaying the information about the target's course and speed directly to the TIE's combat computer.

This system is generally as effective as the flight controller; a good, imaginative controller can judge the ebb and flow of a battle and send the TIE fighters to the appropriate sectors before the enemy can react; a mediocre controller who does everything "by the numbers" can severely hamper the fighters' ability to respond quickly and intelligently to events.

Recently, the Alliance has experimented with flight controllers, as well. In the early stages of the battle of Yavin, General Dodonna acted as flight controller for the starfighters' first run at the Death Star; however, once battle was joined, most tactical decisions were left up to the wing commanders.

Visual Scanners

If a fighter's electronic sensors are jammed, the pilot must rely on *visual scanners*. This is a short-range sensor resembling a video camera with a telescopic lense, giving the pilot visual contact with the enemy craft long before it can be seen by the naked eye. These sensors are almost impossible to jam, though cloaking devices are effective against them.

Visual Contact

The last, and most reliable, means of identification is actual visual contact. Despite their sophisticated array of long-range detection devices, Rebel pilots depend the most on their own eyes. Eyes cannot easily be jammed, altered or otherwise interfered with.

Surprise

A detailed analysis of recordings that have been registered during starfighter victories reveals that four out of every five starfighters shot down in dogfights never saw their assailant. In battle, the key to a quick victory is to surprise the enemy. The key to avoiding a quick defeat is to avoid being surprised.

The perfect way to achieve surprise would be to render your vessel completely invisible -- not only to the naked eye, but to highly-sophisticated sensors as well. A very small number of larger ships are equipped with quite effective cloaking devices; however, the equipment required for cloaking is simply too massive and expensive to fit into a starfighter.

Rendering your ship "invisible" by keeping out of close sensor range and using long-range weapons is generally an ineffective battle tactic. Lasers lose coherency and thus "punch" over long range; concussion missiles and other extreme range weapons are easily tracked by starfighters' sensor equipment, allowing an excellent chance of evasion. It is for these reasons that starfighter combat most often takes place within visual range.

The most effective method of achieving surprise is to drop in close to your enemy from hyperspace. This tactic is commonly employed by Alliance pilots, and it is both extremely rewarding and extremely dangerous.

Sensors cannot operate from out of hyperspace to scan the intended target. Therefore, when Rebel ships employ this tactic they are attacking "blind," relying on intelligence reports of the enemy's position, course and composition. If intelligence reports are accurate, and the attacking Rebel squadron achieves the desired surprise, the raid can be devastating. But, if the Imperials are prepared for such an attack or have changed course or position, the result could be disastrous for the Rebels.

Scanning in Formation

There was an age old saying among pilots of the Clone Wars: "The first to spot the enemy wins." While this may be a slight exaggeration, spotting the enemy first does give a pilot the initiative. In battle, initiative is everything.

To improve their chances of first detection and thus winning the initiative, starfighters fly in formations which allow their sensors to work together in the most efficient manner possible.

In formation, the pilot has two tasks. The first is to monitor his own detection systems, and the second is to keep a visual lookout for any enemy ships which may have evaded the formation's detection net.

Deciding to Attack

When a formation of fighters is detected, a decision must be made whether or not to attack. Ideally, this decision is made by a flight controller, who should have a better overall picture of the battle's tactical situation than the pilots.

For a controller, the battle is a game of probabilities: he knows the tactical situation; he knows his ships' capabilities and can make good guesses about his opponents'. He judges the odds of success and the price of failure; if the odds are in his favor and the price of failure acceptable, he sets up his ships in the most advantageous position he can and lets them go.

For the pilot or wing commander without a flight controller and therefore without a clear picture of the battle, the decision is not so clear-cut. When his sensors pick up an enemy, he has to answer some difficult questions very quickly: Does the contact pose an immediate threat? What are his squadron's chances of surviving an engagement with the contact? What support is available?

Getting any of these questions wrong can mean not only the pilot's personal death, but also make him the cause the deaths of his comrades.

Combat Targeting Computer

The advanced tactical targeting computer employed by Alliance starships is designed to augment the pilot's firing skill. It takes only a small fraction of a second for a skilled pilot to center his sights upon his target and pull the trigger and an equally short time for his weapons to

energize and fire, but, given the high speeds of modern starfighters, his target could have moved right out of his sights. Targeting computers compensate for the delay, charting the speed and course of the target and firing just slightly ahead of the point at which the pilot aims.

When firing manually, the pilot must judge these things for himself. This is an extremely difficult skill to master, particularly with high-speed, quick-turning targets such as the Imperial TIE Interceptor. A pilot who can judge the *angle of deflection* by eye without the aid of a targeting computer is a skilled flyer, indeed.

Combat Stage Two: Closing

If the decision to engage is made, the pilot must attempt to attain an advantageous position for his attack run. This stage of battle is known as "closing."

Speed and Concealment

The two essential elements to a successful closing are speed and concealment. Both aid in limiting the amount of time the opponent has to react to the attack. High speed is useful for another reason, as well. It increases the energy available to the fighter for maneuver combat or disengagement, should either become necessary.

Because of the sophistication of Imperial sensor equipment, concealment is very difficult to achieve. Sensor jamming is usually attempted, but it screws up the jamming starfighter's equipment even more than its target, and the pilot has no idea how effective it is. Further, while it may blur the starfighter's exact location, it will alert everyone within a light year that there is an unfriendly starfighter somewhere in that area.

Deception

Assuming that, as usual, concealment fails, there are other ways to surprise your opposition and maintain the initiative. Of these, deception is the most important.

Essentially, the pilots have to fool their opponents into believing that the attacker's objectives are different than what they really are, that there are more or fewer attackers than there really are, that the main assault is really a feint, that a feint is really the main assault, and so forth. The attackers must do the unexpected. For instance:

- The starfighters make their approach in a dangerously tight formation, which, for a while at least, appears as a single blip on an enemy's sensor screen. The formation stays together until the last possible moment -- until they reach visual scanning range of the targets. Only then does the formation break up into individual ships. If carried off well (and no ship blunders into its wingmate) the enemy finds themselves facing much larger numbers of starfighters than they are prepared for.
- Attack in two wings, forcing the opposition to split up to meet both threats. When the enemy gets in range of one of the wings, they discover that it consists entirely of drone starfighters -- completely harmless. The other wing has all the real ships in it, and the opposition suddenly finds itself for a short time very badly outnumbered.
- Send in one very large attack force to engage the enemy's starfighters. Once the ships are locked in battle and all of the enemy's reserve ships thrown in, send in a small force at top speed to make a run against the undefended battle control ship.
- Break your attack into three separate components. The first begins jamming the enemy's transmissions as soon as they are within range, drawing a great deal of attention to themselves by doing so. The second component goes in quietly, attacking from the other direction, using visual scanners only. The third waits.

The enemy must decide which threat is more dangerous, and split his forces accordingly. The attackers he chooses to concentrate upon turn tail and run, and the third attacking component joins the other force, once more hopefully gaining local superiority.

The possibilities are literally endless, particularly when you realize that the enemy can and will also be simultaneously attempting to deceive you.

Combat Stage Three: Attack

The attack stage accounts for four out of every five starfighter kills. It is thus the single most decisive stage of starfighter combat.

Two factors affect the attack: the tactical situation and the capabilities of the vessels involved. Taking both of these into account, the attack must be launched from the best possible position at the best possible moment. If the attack is launched correctly, the attacker has a tremendous advantage. If not, he is in grave peril.

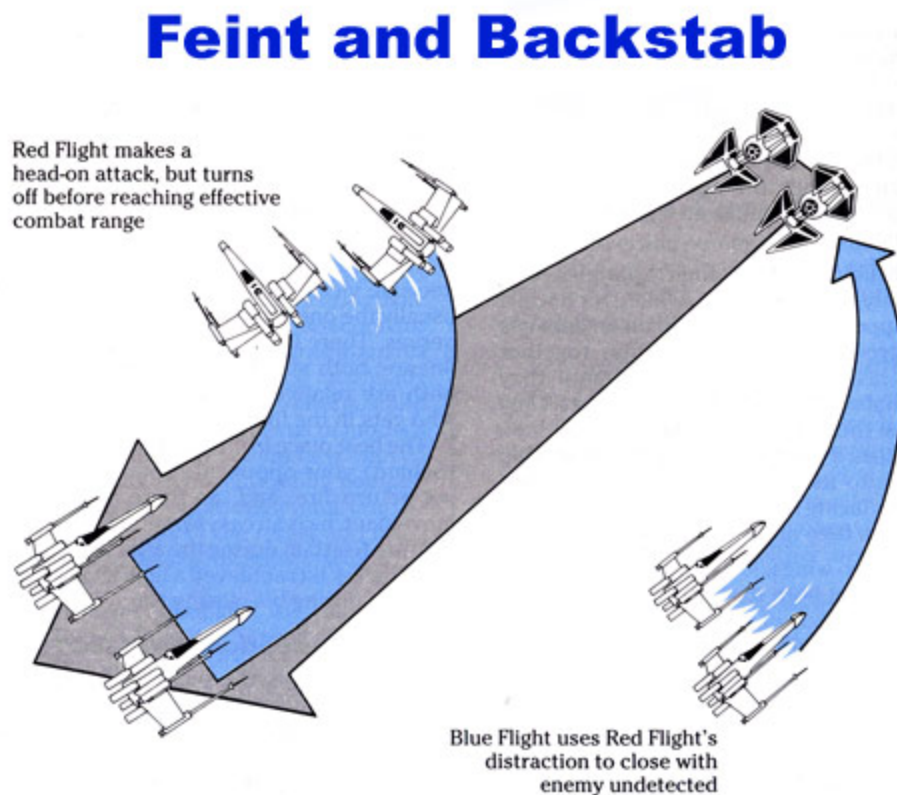
The head-on attack will result in a quick, decisive victory -- for one pilot or the other, usually the one with the best ship and steadiest nerves. There is no subtlety in this attack, no finesse: both starships can fire at each other, both are relatively easy targets, and the one who gets in the first telling shot wins.

The best place from which to attack is astern (behind) your opponent. Your opponent cannot return fire, and, as there is little lateral movement, he is an easy target. This is a difficult posture to attain during the attack stage, unless the attacker has achieved a high level of tactical surprise during his closing run.

Deception in Attack

It is essential to the success of any attack to positively identify the type of enemy formation a pilot has encountered. If a lone ship is spotted, where is his wingman? A

favorite Imperial ploy is to have one fighter trail some distance behind his wingman, waiting for an enthusiastic young Alliance pilot to jump in behind the front TIE to attack it from the rear. If he does so, the Rebel has unknowingly lined himself up for a devastating attack by the trailing fighter.



Alliance pilots often use a somewhat more complicated strategy of deception, known as the "feint and backstab." In this technique, a decoy formation attacks in order to distract the enemy from the true attack.

For example: one flight of starfighters forms up for a head-on run in full view of enemy sensor surveillance, while a second flight skirts around behind the enemy, remaining outside sensor range. The first flight closes as if to attack, but breaks away before close range is reached. At the same time, the other flight closes from an advantageous position, ready to take advantage of the enemy's confusion. The diversionary flight stands by, ready to re-enter the fight if needed.

If they survive their first battle, pilots quickly learn never to take anything for granted.

Combat Stage Five: Disengagement

This is the final stage in starfighter combat. Adar Tallon's comments on the subject are rather strong: "It is rarely given adequate attention. The inexperienced pilot frequently believes that following an attack pass, particularly a successful one, the engagement is over and he can relax. This is dangerous nonsense."

Diminished vigilance at this final stage of combat is a recipe for disaster -- particularly for Alliance pilots. This is because we almost always find ourselves outnumbered. In a typical quick-strike attack, the pilots cannot afford to dally, for fear of giving the Imperials too much time to regroup or gather reinforcements. If a pilot cannot disengage, he cannot make a clean jump into hyperspace. The longer he stays in the combat area, the more vulnerable he is to being swarmed by superior numbers of Imperial fighters.

The ideal way to disengage is, of course, to destroy all the enemy. This is not always possible. A plan for disengagement should be considered before an attack is commenced. Angling-off at full-throttle following a full-throttle attack is the simplest method, and is effective if the attacker has not become engaged in a dogfight.

Getting free from a dogfight is much more difficult because the timing must be perfect. The best moment to break off from maneuver combat is when the situation is neutral, with neither starfighter having the positional advantage.

The words of Adar Tallon once again: "If a pilot is under enemy attack and manages to recover to a neutral position and disengage, he has won the engagement. If he is the assailant and his target manages to attain a neutral position, he should immediately disengage and look for easier prey. If he remains engaged, he risks becoming disadvantaged himself."

Lifesaving Techniques

There are several crucial elements to any disengagement. First and foremost, the pilot must have speed. It is far easier for a pilot to disengage when travelling at full-throttle, particularly when the combatants are not on parallel courses. Full-throttle puts a great deal of distance between a pilot and an adversary attempting to turn and catch him.

To make sure that the disengagement is clean, a pilot must attempt to maintain visual contact with his opponent. Attempting to disengage while unsure of an opponent's position could easily result in the opponent gaining a position of advantage.

If a pilot loses sight of his opponent while in a turning contest (such as the scissors), he should continue turning until he regains contact. If seeking to disengage while under attack, the pilot should always turn toward the enemy. In this way, he can meet his assailant with the best chance of angling-off and escaping after the attacker has taken his shots. If the pilot flies away from his opponent, he risks allowing the opponent to get on his tail. This is doom.

This first appeared as a chapter in the Rebel Alliance Sourcebook by Paul Murphy, published in 1990 by West End Games.